In the Claims:

Please amend claims 31 and 34. The status of the claims is as follows:

1. (Previously Presented) A buck-boost converter for converting a plurality of dc input voltages from a plurality of voltage sources to at least one dc output voltage, the converter comprising:

a plurality of voltage inputs;

a switch in an electrical path from each of said voltage inputs for conducting current from and blocking current to said voltage inputs;

a magnetically inductive device in an electrical path from each of said switches; and

a voltage output bucked or boosted relative to one of said voltage inputs in an electrical path from said magnetically inductive device.

2. (Previously Presented) The converter recited in claim 1, wherein said voltage output comprises one of a plurality of voltage outputs.

3. (Previously Presented) The converter recited in claim 1, wherein said magnetically inductive device comprises an inductor.

4. (Previously Presented) The converter recited in claim 1, wherein said magnetically inductive device comprises a transformer.

5. (Previously Presented) The converter recited in claim 4, wherein said voltage output is reversed in polarity relative to one of said voltage inputs.

6-7. (Canceled)

8. (Previously Presented) The converter recited in claim 1 in an electrical path with a secondary converter (32), the apparatus having said voltage output fed back to one of said plurality of said voltage inputs through said secondary converter.

9. (Previously Presented) The converter recited in claim 1 wherein

each of said switches is switched on substantially simultaneously with a switch signal;

each of said switches has a different duty cycle;

a voltage index i is assigned to each voltage source connected to a voltage input of plurality of said voltage inputs such that $V_1 > V_2 > \ldots V_n$; and

each of said switches has an effective duty cycle $D_{eff(i)}$ of

$$D_{eff(i)} = \begin{cases} 0, & D_i < \sum_{j=1}^{i-1} D_{eff(j)} \\ D_i - \sum_{j=1}^{i-1} D_{eff(j)}, & D_i \geq \sum_{j=1}^{i-1} D_{eff(j)} \end{cases}$$

such that a voltage at the voltage output V_o is

$$V_o = \frac{\sum_i D_{eff(i)} V_i}{1 - \max_i (D_i)}.$$

10. (Previously Presented) The converter recited in claim 9, further comprising:

an input control circuitry in an electrical path to each of said respective switches for controlling switching of said switches.

11. (Previously Presented) The converter of claim 1 wherein

a current through said magnetically inductive device, said magnetically inductive device having an inductance L, is greater than zero in steady state operation;

each of said switches is switched on and off with a binary switching signal having a value of 1 or 0;.

said voltage output is connected to a resistive load R;

only one of each of said switches is switched on in any given period of time T, such that

a current in the magnetically inductive device i_p is

$$i_p = \sum_j \left|\Delta i_j\right| = \frac{T}{L} \sum_j D_{eff(j)} V_j \ ,$$

and

a voltage at the voltage output V_{out} is

$$V_{out} = i_p \sqrt{\frac{RL}{2T}} \ .$$

12. (Previously Presented) The converter recited in claim 11, further comprising:

input control circuitry in an electrical path to each of said switches for controlling switching of said current switches.

13. (Previously Presented) The converter recited in claim 1, wherein said switch comprises a forward-conducting-bidirectional-blocking switch.

14. (Canceled)

15. (Previously Presented) A buck-boost converter for providing dc power from more than one source to at least one load, comprising:

a magnetically inductive device;

a plurality of inputs for respective sources in parallel through respective switches for conducting current from and blocking current to said inputs, to said magnetically inductive device; and

at least one output bucked or boosted relative to one of said inputs for at least one load in parallel with a capacitor, said capacitor being in series with a diode connected to said magnetically inductive device.

16. (Previously Presented) The converter recited in claim 15, further comprising:

input control circuitry in electrical paths to said respective switches for switching said switches to open and close said electrical paths from said inputs to said magnetically inductive device.

17. (Previously Presented) The converter recited in claim 16 wherein said input control circuitry closes at most only one of said switches at a given time.

18. (Previously Presented) The converter recited in claim 16 wherein said input control circuitry closes up to all of said switches at a given time.

19. (Previously Presented) The converter recited in claim 15 wherein said magnetically inductive device comprises a transformer including at least one primary winding and at least one secondary winding; and

the converter further comprises at least one bidirectional output in an electrical path in parallel through an additional current-conducting-bidirectional-voltage-blocking switch from said at least one secondary winding of said magnetically inductive device, and in an electrical path to an input of said plurality of inputs; and

bidirectional control circuitry for switching said additional current-conducting-bidirectional-voltage-blocking switch.

20. (Previously Presented) The converter recited in claim 19 wherein said load that may serve as a source comprises a rechargeable battery.

21. (Previously Presented) The converter recited in claim 15 wherein said magnetically inductive device comprises a transformer including at least one primary winding and at least one secondary winding.

22. (Previously Presented) The converter recited in claim 15 wherein said transformer includes a plurality of secondary windings and said at least one output includes respective outputs in electrical paths to each of said plurality of secondary windings.

23. (Previously Presented) The converter recited in claim 15 wherein at least one output includes at least one output in an electrical path to a primary winding of said at least one primary winding and at least one output in an electrical path to said at least one secondary winding.

24. (Previously Presented) The converter recited in claim 15, wherein said current-conducting-bidirectional-voltage-blocking switch comprises a forward-conducting-bidirectional-blocking switch.

25. (Previously Presented) The converter recited in claim 15, wherein said current-conducting-bidirectional-voltage-blocking switch comprises a bidirectional-conducting-bidirectional-blocking switch.

26. (Previously Presented) A buck-boost system for supplying power to a load from a plurality of sources, the system comprising:

a plurality of sources;

a respective voltage input in an electrical path from each of said plurality of sources;

a switch in an electrical path from each of said voltage inputs for conducting current from and blocking current to said voltage inputs;

input control circuitry in an electrical path to each of said switches for controlling switching of said switches;

a magnetically inductive device in an electrical path from each of said current-conducting-bidirectional-voltage-blocking switches; and

a voltage output bucked or boosted relative to one of said voltage inputs in an electrical path from said magnetically inductive device.

27. (Previously Presented) The system recited in claim 26, wherein said switch comprises a forward-conducting-bidirectional-blocking switch.

28. (Canceled)

29. (Previously Presented) A buck-boost for substantially equalizing the charges of a plurality of rechargeable voltage sources, the system comprising:

a plurality of rechargeable voltage sources arranged serially in an electrical path;

respective voltage inputs in respective electrical paths to all excepting at least one of said rechargeable voltage sources;

respective current-conducting-bidirectional-voltage-blocking switches in respective electrical paths to said all excepting at least one of said plurality of rechargeable voltage sources;

a magnetically inductive device in an electrical path with said current-conducting-bidirectional-voltage blocking switches;

an output comprising a voltage output and a current output, said voltage output

being bucked or boosted relative to one of said voltage inputs and in parallel with a capacitor in series with a diode to said magnetically inductive device;

wherein said current output is fed back to a rechargeable voltage source that is not comprised in said all excepting at least one of said rechargeable voltage sources.

30. (Original) The system recited in claim 29 further comprising:

a load in an electrical path to said output.

31. (Currently Amended) A method for selectively connecting a plurality of voltage input sources that are in an electrical connection to a magnetically inductive device, the magnetically inductive device being in an electrical path to at least one load, the method comprising:

inserting a switch in the electrical path from each of the voltage input sources for conducting current from and blocking current to the voltage input sources; and

~~accepting a~~ applying a control signal to select one or more of said switches to allow current to flow through said selected one or more switches to the magnetically inductive device from the plurality of voltage input sources corresponding to the selected one or more switches.~~; and~~

~~based upon said signal, selectively blocking up to all of said plurality of voltage input sources from said magnetically inductive device.~~

32. (Original) The method recited in claim 31, further comprising:

sensing a current in said magnetically inductive device.

33. (Original) The method recited in claim 32, wherein

said sensing is performed with only a single sensor.

34. (Currently Amended) The method recited in ~~claim 31~~ claim 32, further comprising:

decoding of said signal to obtain a switching state.

35. (Original) The method recited in claim 34, further comprising:

determining a current coming into each of said voltage input sources.

36. (Original) The method recited in claim 35, wherein said determining comprises decomposing said current in said magnetically inductive device based upon said switching state.

37. (Previously Presented) An apparatus for converting a plurality of dc input voltages from a plurality of voltage sources to at least one dc output voltage, the apparatus comprising:

a plurality of voltage inputs;

a switch in an electrical path from each of said voltage inputs for conducting current from and blocking current to said voltage inputs;

a magnetically inductive device in a common electrical path shared by each of said switches; and

a voltage output in an electrical path from said magnetically inductive device.

38. (Previously Presented) The apparatus as defined in claim 37, wherein said inductive device is downstream of said switches.